

Installation manual

for **SKG** service lifts



The existing shaft dimensions need to be checked for conformity with the layout drawings. In case of deviations, please make a technical clarification with us before the installation process.

The installation must be made in compliance with the relevant safety standards.

Don't stand underneath the unsecured cabin.
Danger of life!



This installation manual is a recommendation based on our experience, it is not a working instruction.

Please take the installation details from our layout drawings. Front side, which is side X on the layout drawings, always means the side on which the machine room door is positioned. Please install along the described order in this manual.

Deviations to these photos are always possible due to technical variations.

The controller is delivered in a separate box. Next to this installation manual, you will also find in the box:

- A** Wiring diagrams
- B** Capacity signs
- C** Operation manual
- D** Layout drawings

All bolted connections need to be fastened with the torques as mentioned in the table:
strength class 8.8

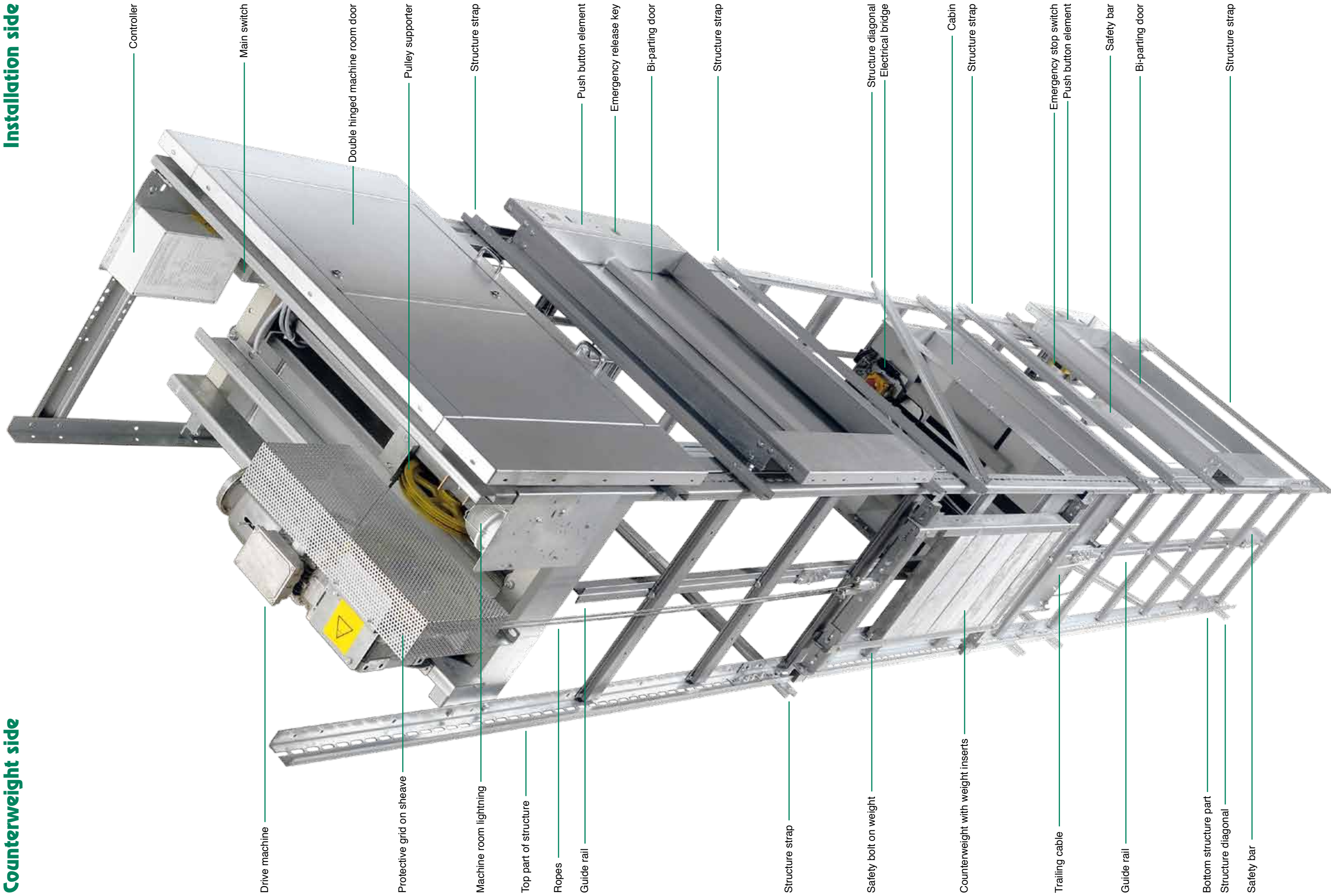
Fastening torques of all screws	M 4	5 Nm
	M 5	7,1 Nm
	M 6	12 Nm
	M 8	30 Nm
	M 10	60 Nm
	M 12	105 Nm

Exception: the round-head screws M 8 need to be fastened to **25 Nm**.

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1. Installation of the bottom structure part
2. Installation of the safety bar
3. Inserting the cabin
4. Inserting the counterweight
5. Installation of the other structure parts
6. Installation of the machine supporter
7. Installation of the drive machine
8. Inserting the suspension elements
9. Installation of the landing doors
10. Installation of the controller
11. Installation of the shaft electrics
12. Check of overrun
13. Put lift in operation
14. Security-related final check





Structure bracket
215 x 35 x 3 mm



Locking plate
for guide rail
160 x 48,5 x 2 mm



Connection piece
for guide rail
160 x 45 x 3 mm



Straight wall anchor
135 x 35 x 3 mm



Clamp plates
for structure straps
50 x 50 x 3 mm

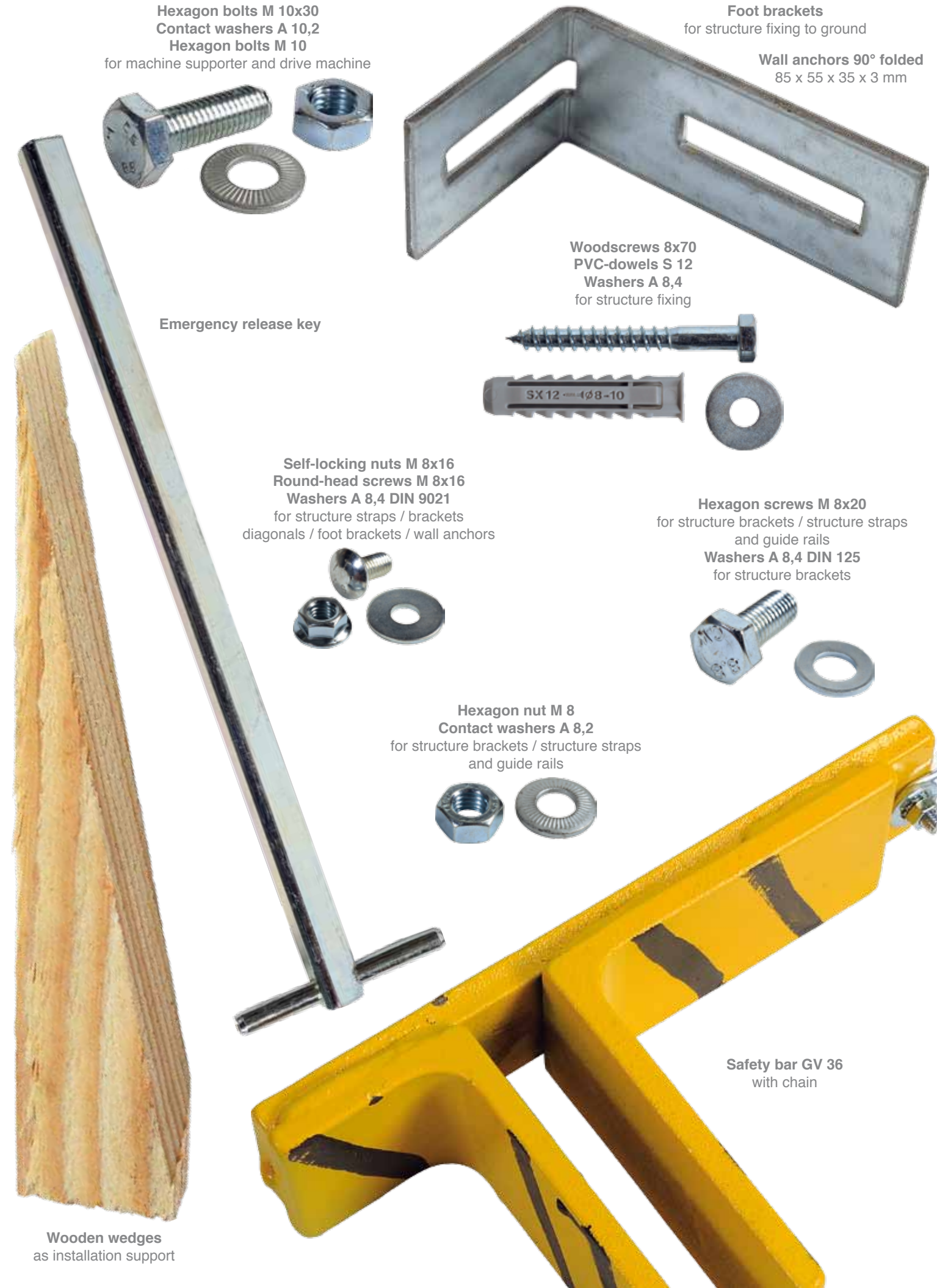


Metal plate
for guide rail
100 x 40 x 1,25 mm



Balance plate
90 x 90 mm

Scale 1:1



Hexagon bolts M 10x30
Contact washers A 10,2
Hexagon bolts M 10
for machine supporter and drive machine

Foot brackets
for structure fixing to ground

Wall anchors 90° folded
85 x 55 x 35 x 3 mm

Woodscrews 8x70
PVC-dowels S 12
Washers A 8,4
for structure fixing

Emergency release key

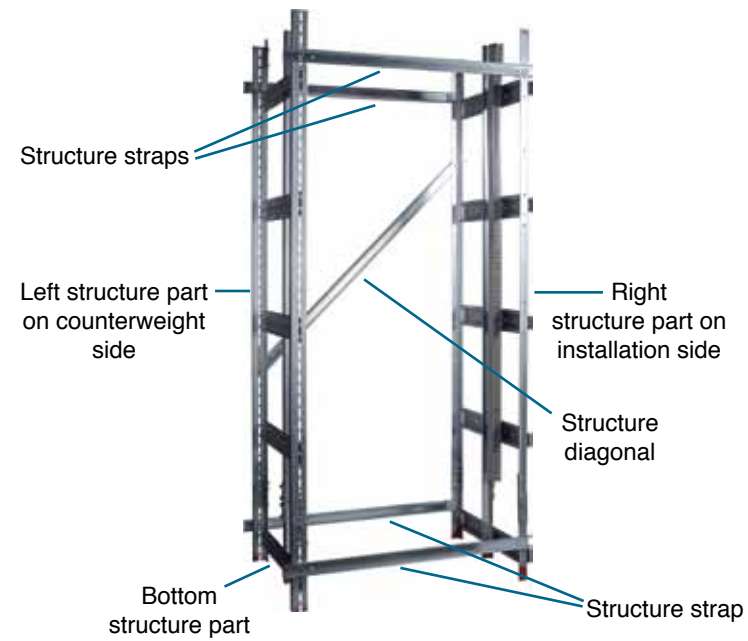
Self-locking nuts M 8x16
Round-head screws M 8x16
Washers A 8,4 DIN 9021
for structure straps / brackets
diagonals / foot brackets / wall anchors

Hexagon screws M 8x20
for structure brackets / structure straps
and guide rails
Washers A 8,4 DIN 125
for structure brackets

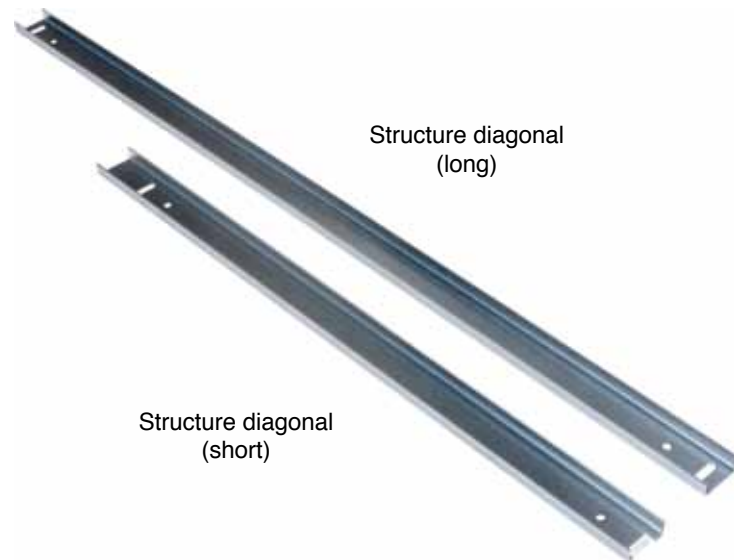
Hexagon nut M 8
Contact washers A 8,2
for structure brackets / structure straps
and guide rails

Safety bar GV 36
with chain

Wooden wedges
as installation support



The structure consists of the right and left structure parts, the structure straps and the structure diagonals. The cable conduits and the guide rails are pre-installed on the structure parts.



Top part of structure part on counterweight side



Top part of structure on installation side



Guide rails

Cable conduit

Structure part on counterweight side



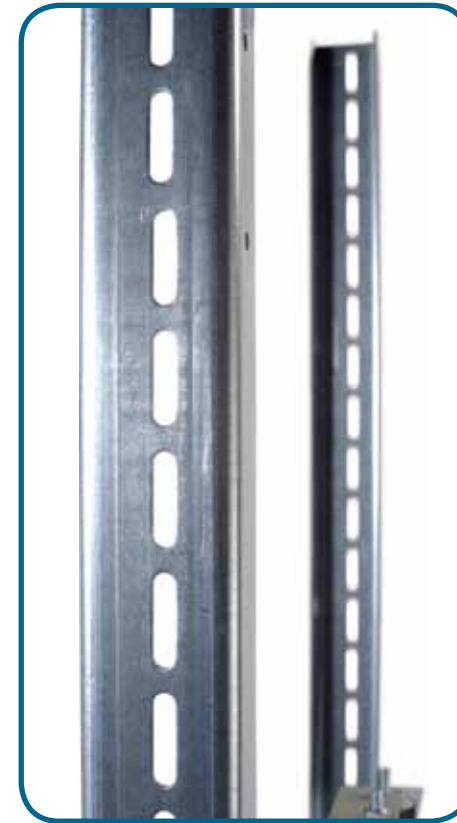
Structure part on counterweight side



Please consider that the cabin needs to be inserted in the guide rails. We recommend to insert the cabin with a suitable hoist after the installation of the first structure parts. Please make sure that the structure parts with the elongated hole row (U-profile) is mounted on the counterweight side.

In the following, the structure side with the U-profile is called counterweight side. The structure side with the L-profile is called installation side.

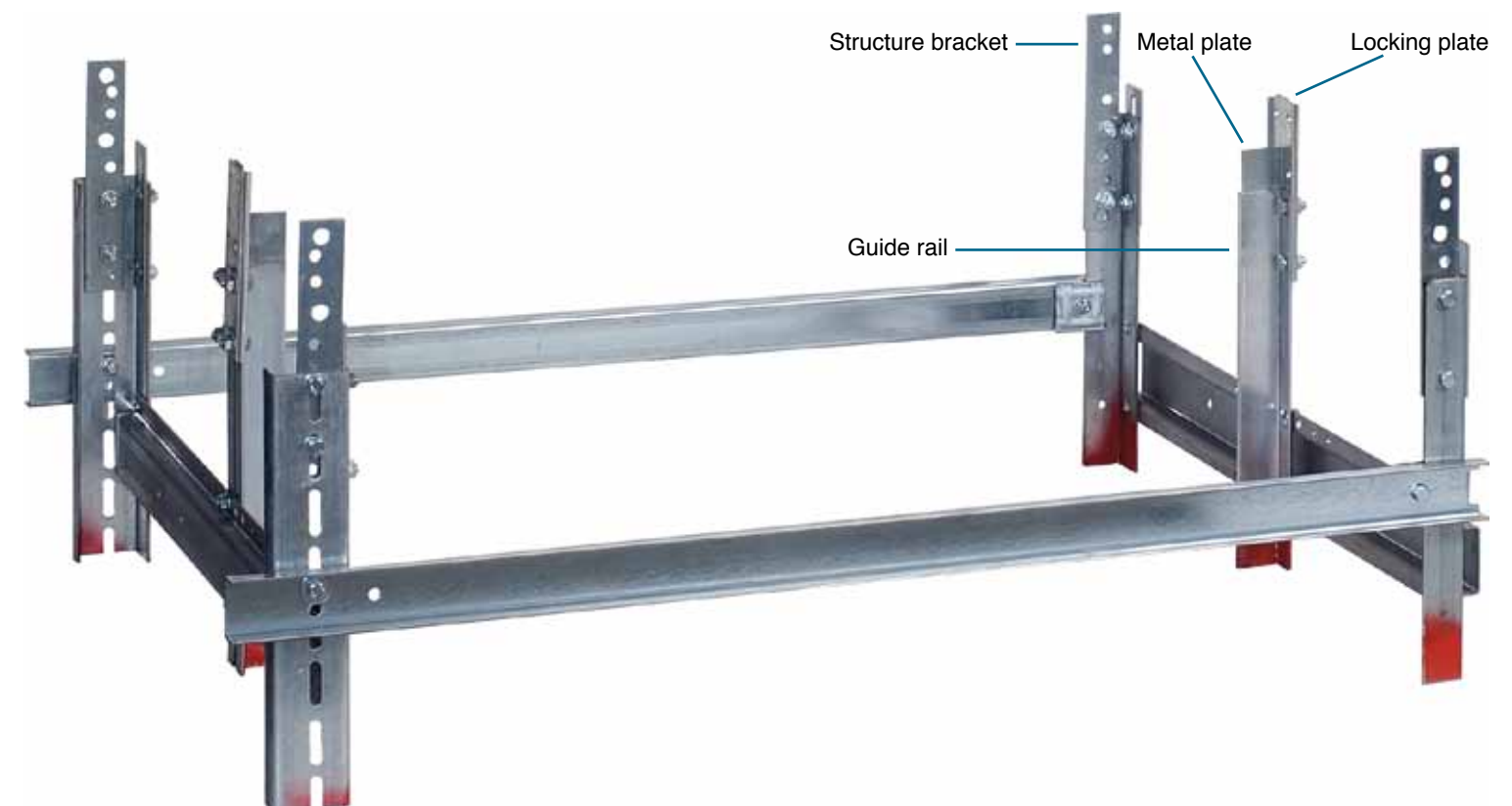
Counterweight side
(U-profile with elongated hole row)



Installation side
(L-profile)



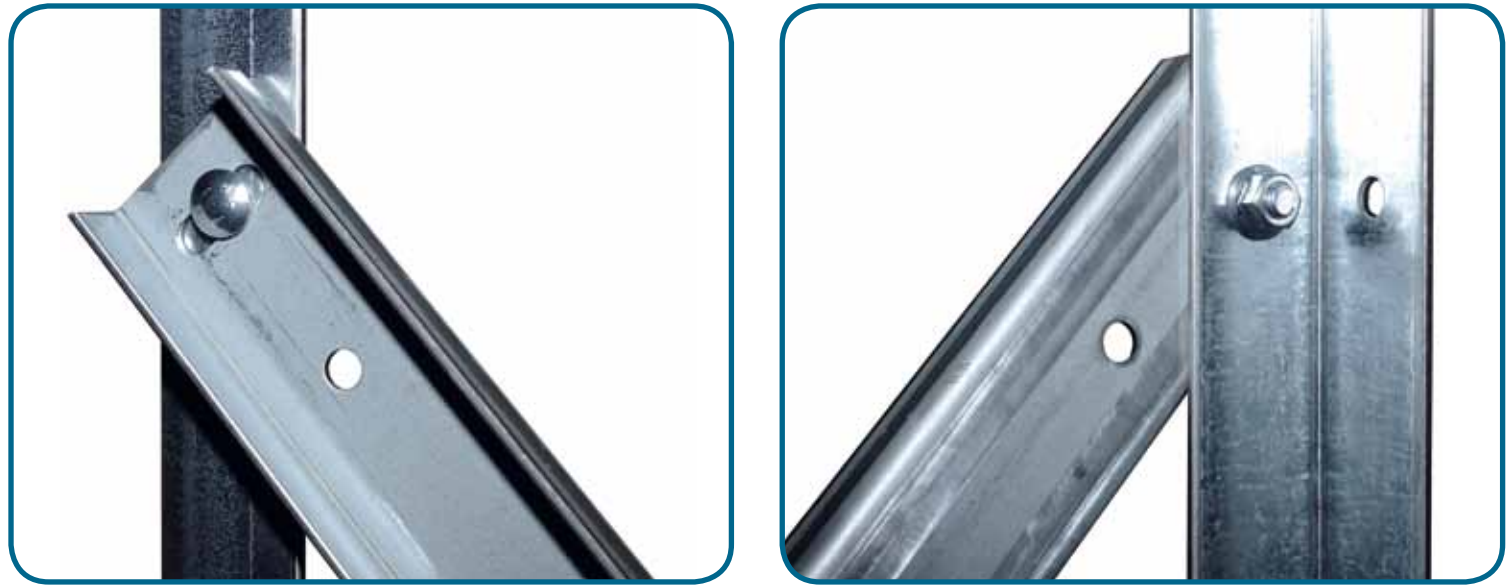
Please adjust the support points before positioning the bottom, **red** painted structure parts. The difference in height is to be adjusted by balance plates.



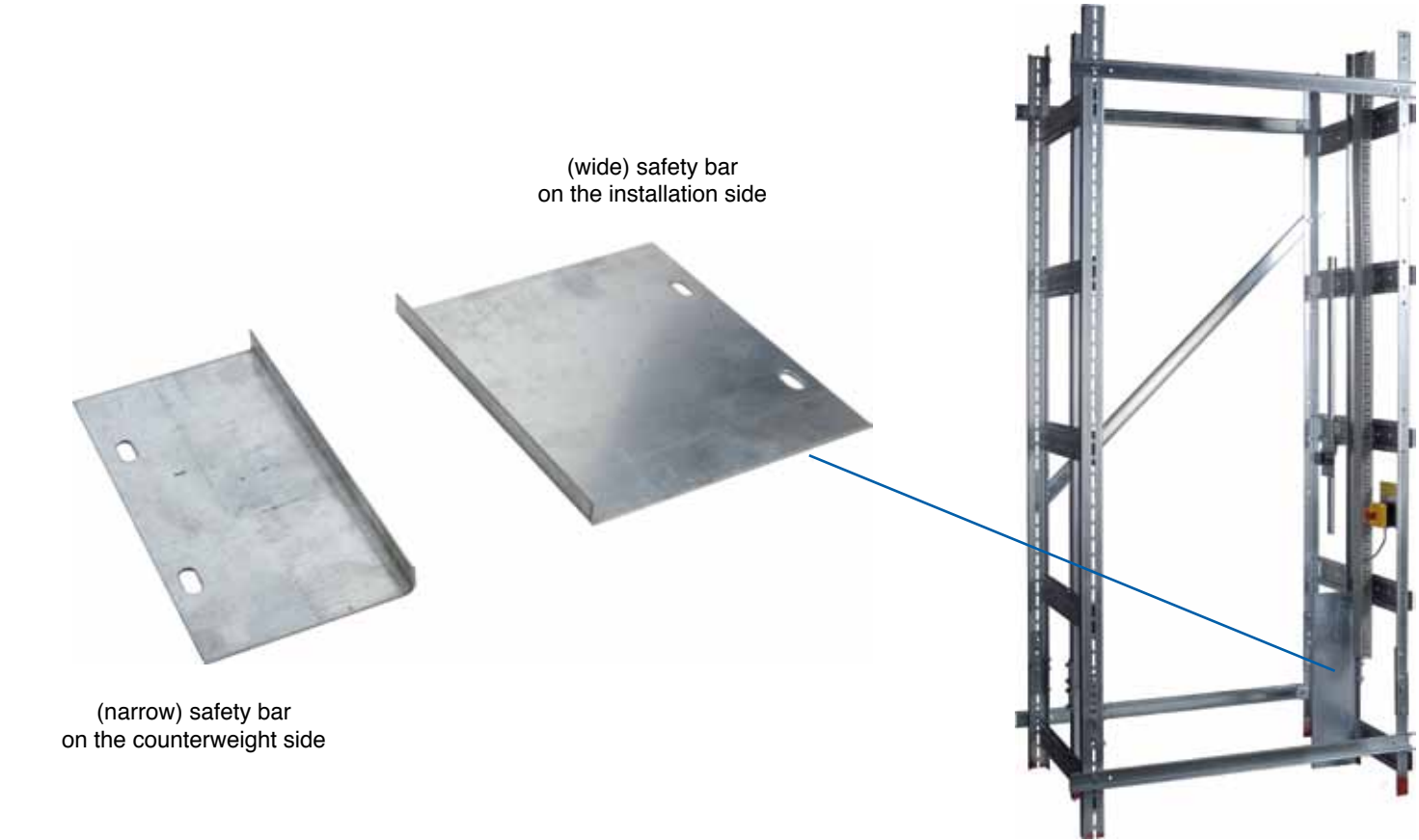
The structure straps are to be screwed together with the structure parts as shown on the photos.



Each structure part with 2 m length is to be reinforced with a structure diagonal.



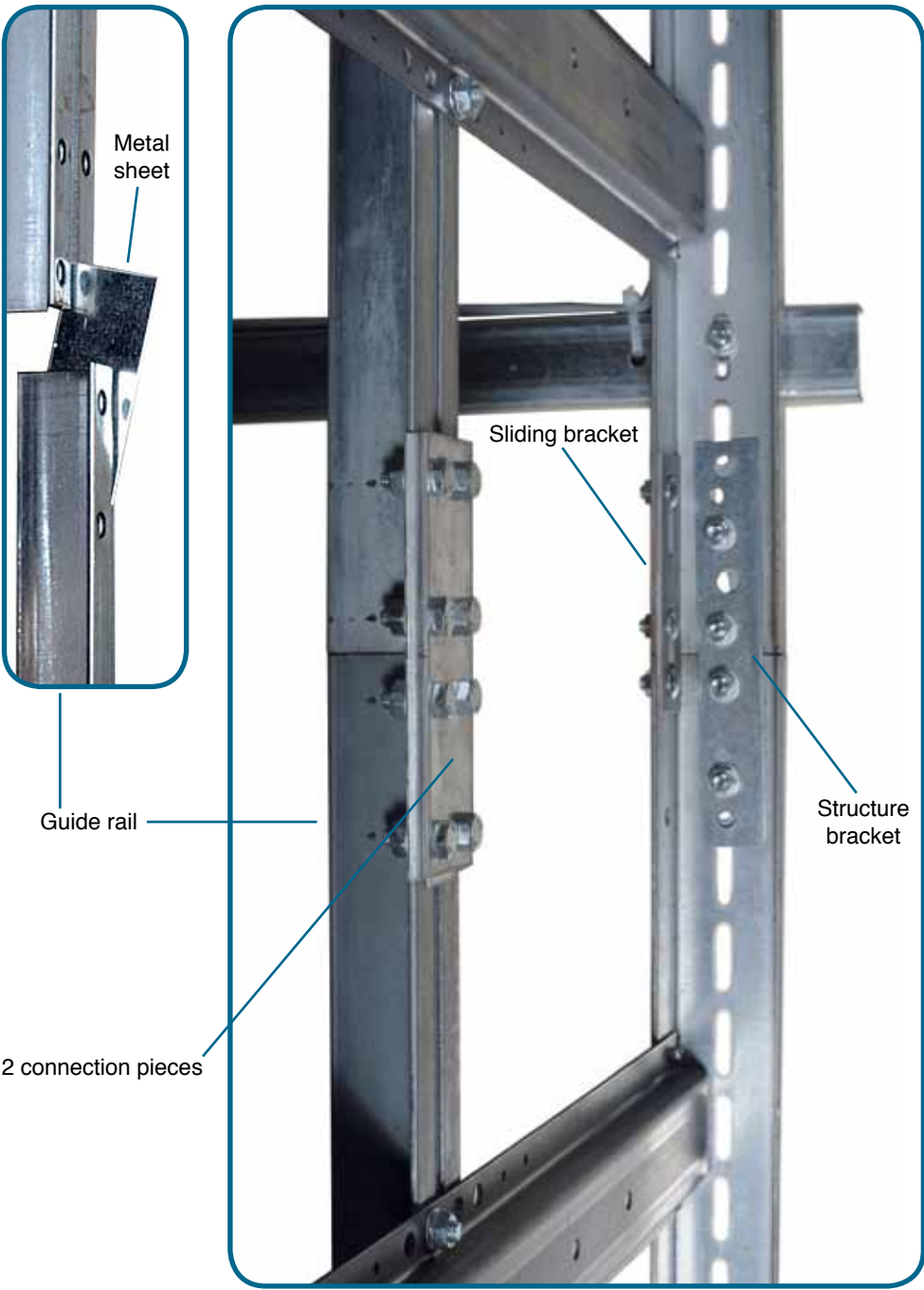
The safety bars are to be installed with 2 pieces M 6 screws on the bottom structure part guide rails. This kind of safety bar is available only when the cabin is not equipped with buffers. The narrow safety bar is to be fixed on the counterweight side (U-profile), the wide safety bar on the installation side (L-profile).



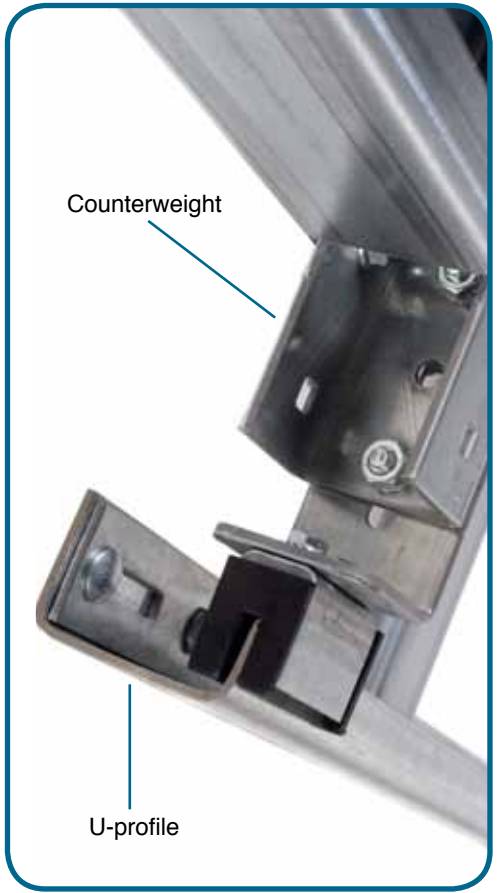
Sliding brackets are pre-installed on top of the structure parts. These serve as additional structure brackets for the further fixing of the structure parts.



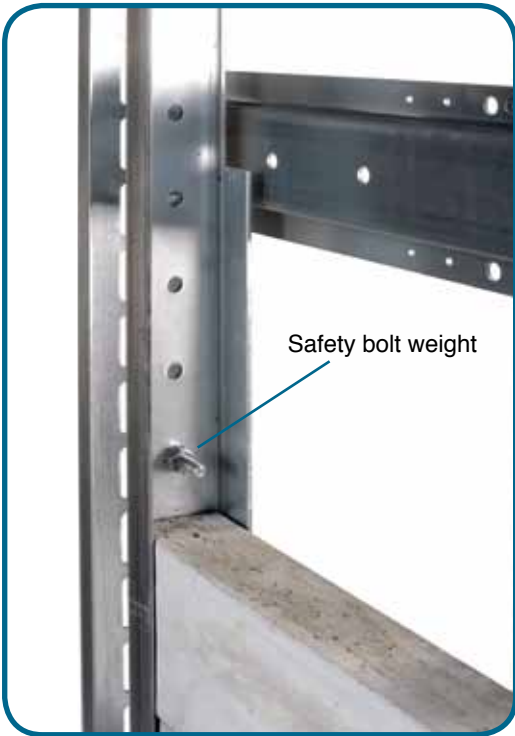
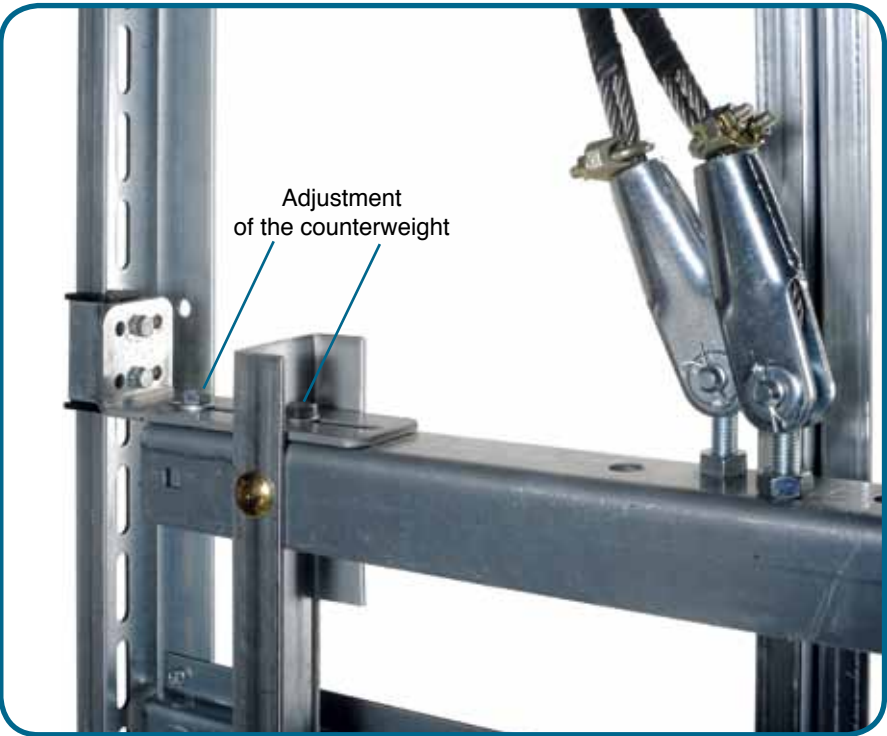
The sliding bracket is to be inserted into the end of the guide rail. This facilitates the alignment of the guide rails. The guide rail ends are to be screwed together with 2 connection pieces. **These screws should be tightened after the alignment of the guide rails.**



Before the installation of the top structure part, the counterweight must be inserted in the U-profile.



The counterweight is adjustable between the guides. Unscrew the screws of the frame for inserting the counterweight inserts. After inserting, the screws must be tightened again.



Insert the weight inserts in a zigzag



When the complete structure is installed, it is to be plumb adjusted with the wooden wedges and then fixed securely with the wall anchors, dowels and screws. The screw joint in the brickwood only serves for the fixing of the spacers (wall anchor and foot bracket). **The screws must not be loaded on strain.**



The safety bar (yellow) is to be fixed on the structure with the chain. On all works in the shaft, the safety bar **must be put in the structure between 5 to 25 mm** next to the guide rail at a minimum height of 1,8 m for blocking the cabin and the counterweight.

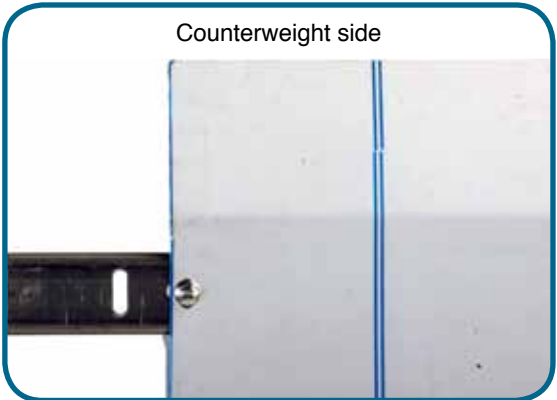


Special features on different constructions

Rear guard plates (optional)

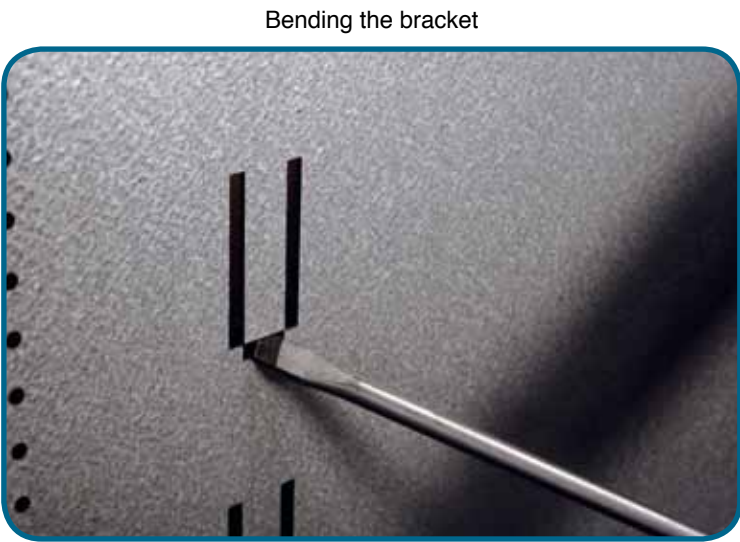
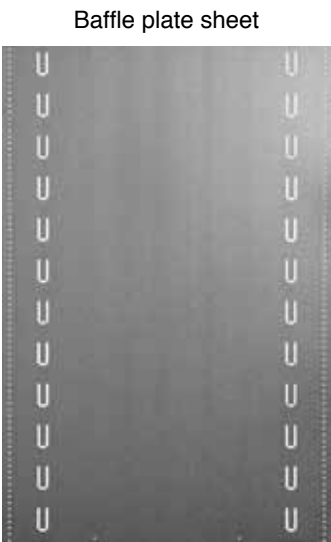
The rear guard plates are to be screwed together with the structure straps on the opposite side of the landing doors. On through-car lift cabins, they prevent that the goods projecting the shaft structure. The rear guard plates need to be installed at the same time as the the structure straps. When installing the rear guard plates retrospectively, the stucture straps must be removed from the rear guard plates.

Rear guard plates



Baffle plates (optional)

The baffle plates (optional) are to be installed on the structure to the full travel height. As a support, 2 brackets are bent, so the baffle plates can be hooked on the structure straps. Then the baffle plates are screwed with the drilling bolts $\varnothing 4,2 \times 16$ onto the structure straps.



Safety gear (optional)

On lifts with safety gear, the guide rails are made of blank steel. On this construction, the alignment sheets are not applicable. There is no need for the balance weight. A govenor tension weight will be installed instead.



Guide rails made of blank steel

Shaft partition wall (optional)

A shaft partition wall needs to be installed if 2 lift units are sharing a common shaft. Only then, a shaft partition wall is delivered with the lift. You can see on the layout drawings to which lift unit the shaft partition wall has been packed.

The cabin is pre-installed. It needs to be inserted with a suitable hoist into the guide rails. The cabin guide shoes can be adjusted inside the holding brackets with the M 10 screws. The retiring cam for opening the landing doors is positioned on the installation side.



Cam for opening the landing doors

Only on 2 stops, a further control cam for the floor switches is installed at the side.



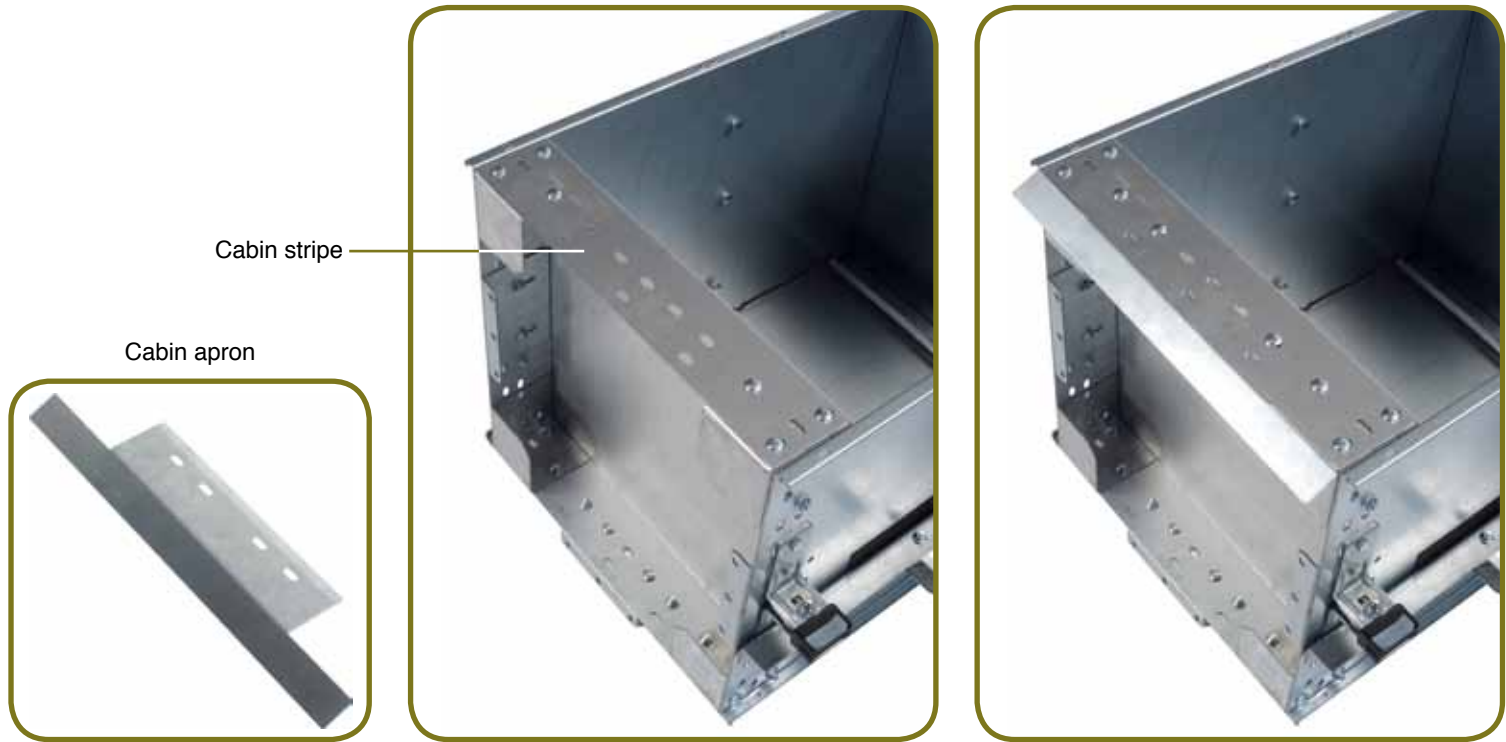
Cam for the floor switches

Cam for opening the landing doors

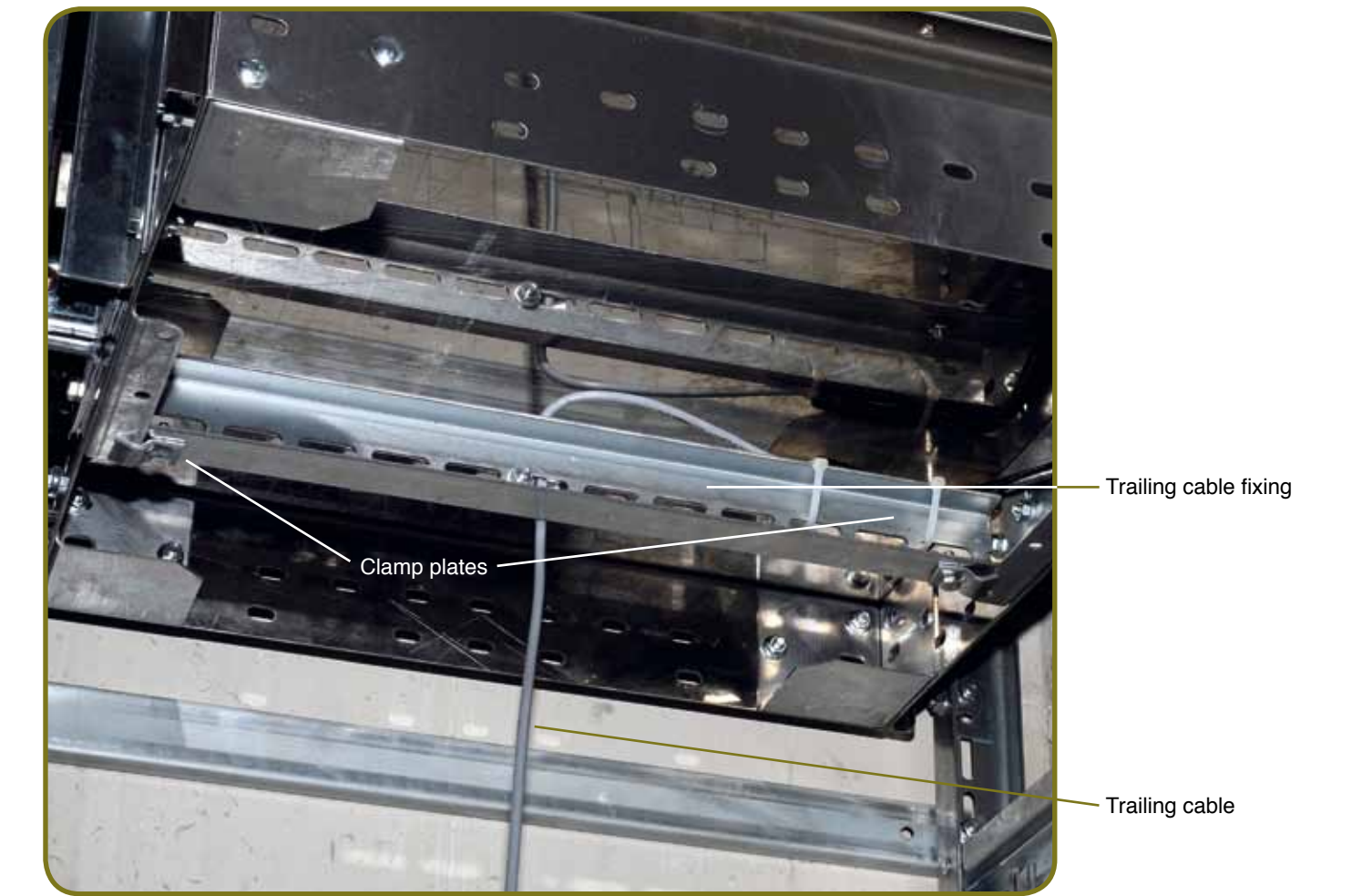
Only on lifts with more than 2 stops, a holding metal sheet with adjustable magnets is used. The holding metal sheet with the magnets replaces the floor switch cam.



The cabin apron is to be fixed with the round-head screws to the lower cabin stripe (not applicable on cabin door).

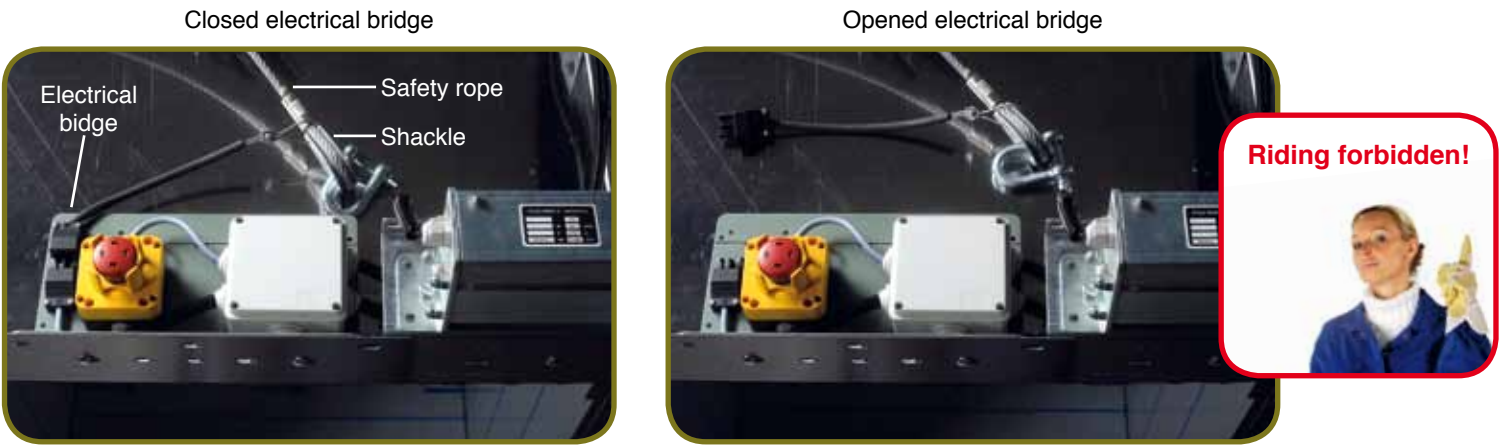


The trailing cable fixing is to be installed center the cabin and then to be fixed with clamp plates to the stripes at the side.



A trailing cable is applicable only if safety switches or electrical retiring cams (EMT14 or 15) are installed on the cabin. Please see wiring diagrams.

The riding on the cabin ceiling is strictly forbidden! You are only allowed to step onto the cabin ceiling (see EN81-3 0.3.12.1). Therefore, the safety rope on the cabin must be put around the guide rail and must be secured with the shackle. The electrical bridge next to the emergency stop switch will be opened when necessarily so the safety circuit is open.



Special features on different constructions

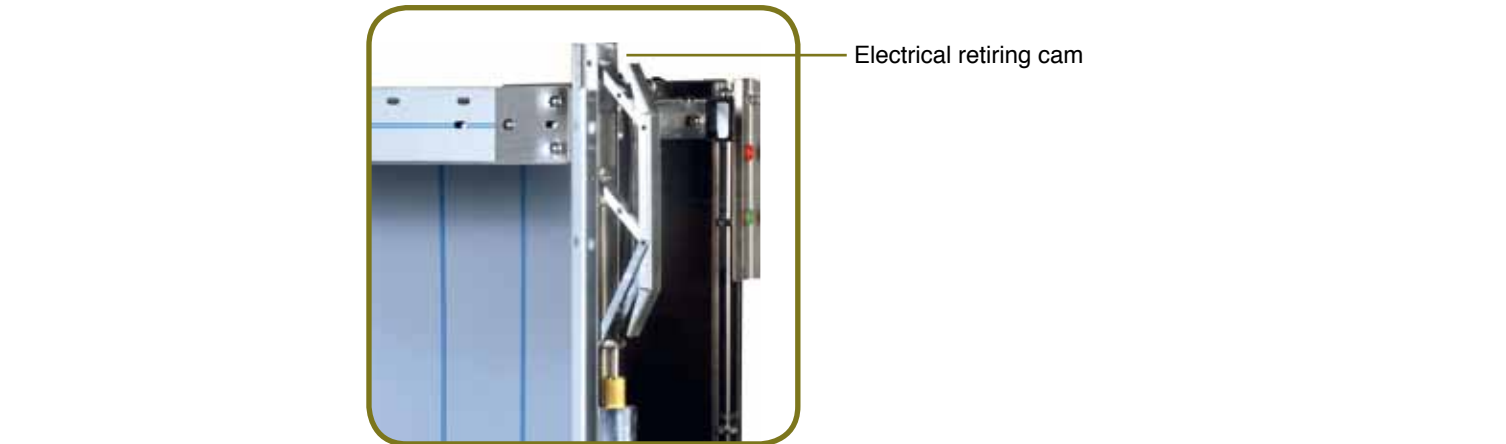
ISO-A (Bi-parting doors on serving height)

The landing doors will be unlocked by a fixed type cam. There are 2 types of door locks without fail safety device: TV90 and TV3074.



ISO-C (Bi-parting doors with serving height lower than 700 mm)

The landing doors will be operated by an electrical retiring cam (EMT 15). The door lock with fail safety device is called TV90a.



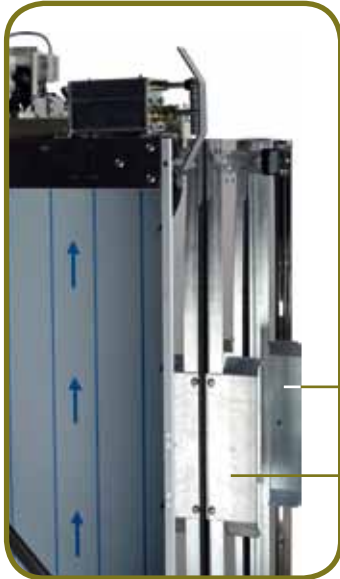
ISO-D (Swing doors serving at floor level)

The landing doors will be operated by an electrical retiring cam (EMT 14).



Drive machine with chain wheel or rope drum

The cabin is equipped with an additional switch activation cam for the control current limit switch. The additional safety switch is activated automatically if the floor limit switch fails. The position (left or right) of the control current limit switch depends on the cabin depth.



Activation cam for control current limit switch
Activation cam for floor switch



Activation cam for control current limit switch

Special features on different constructions

Cabin shelf

The cabin shelves need to be layed on the plastic rings in the cabin to prevent any slipping.



Heated cabin shelf, cabin floor or cabin ceiling

Heated cabin shelves are screwed inside the cabin ceiling and can not be taken out. The switch / switches for switching on or off the heater is / are located at the front of the cabin ceiling.

Special angles for cabin shelf

In this design, the cabin is equipped with several angles for trays.



Cabin roller shutter

The cabin roller shutter is pre-installed and its tension is pre-adjusted. During the installation of the roller shutter, the proper closing and the function of the switch need to be checked. The roller shutter switch is positioned underneath the cover of the tension device. The tension of the roller shutter spring can be adjusted at the side. Hold the spring at first, then loose the tension screws.



Tension device

Tension screws

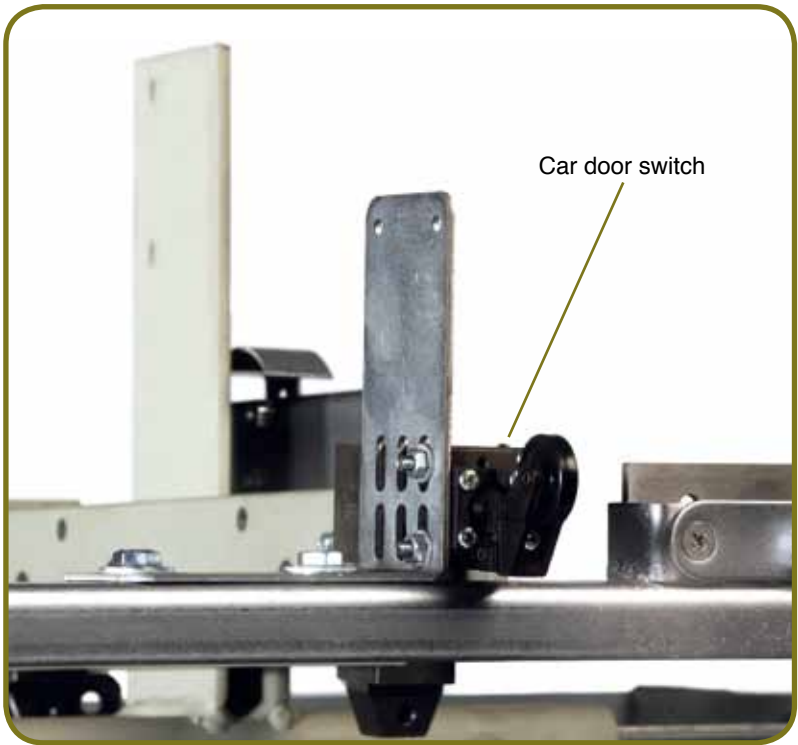
Spring



Switch activated

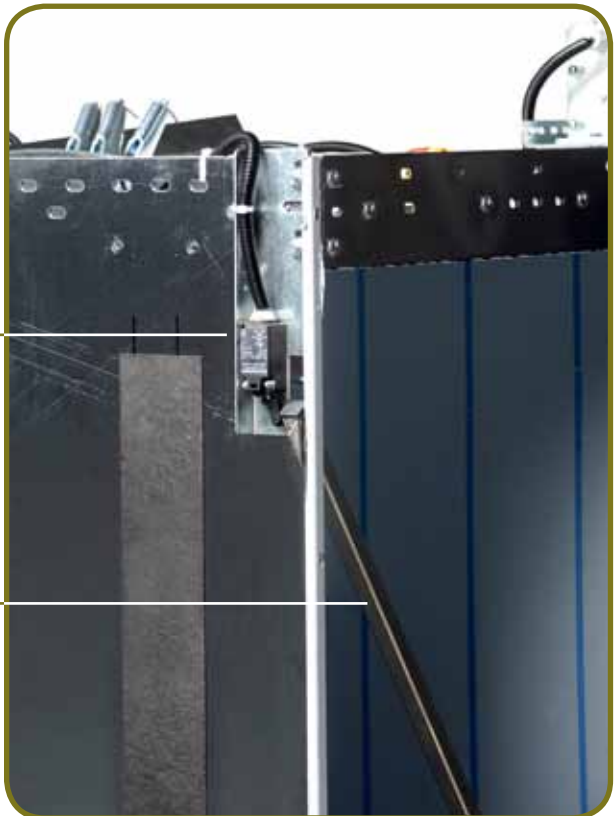
Cabin door

The cabin door is to be fixed with the M 6 x 16 screws to the cabin. During the installation of the cabin door, the proper closing and the function of the switch needs to be checked. The car door switch is positioned on top of the cabin.



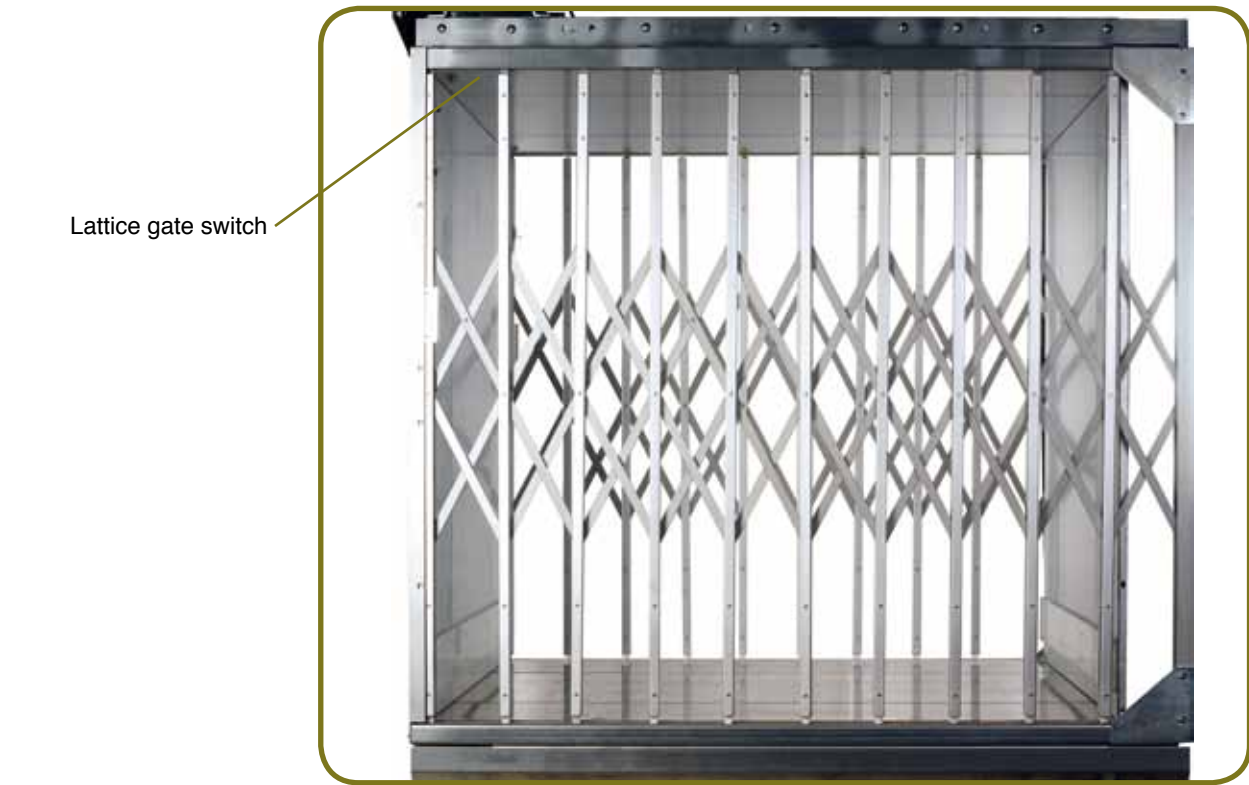
Drop bar

The drop bar is pre-installed and pre-adjusted. During the installation of the drop bar, the proper closing and the function of the switch needs to be checked. The drop bar switch is positioned at the outside of the cabin behind the opening of the drop bar in closed position.



Fixed-type or hinged-type lattice gate

The lattice gates are pre-installed and pre-adjusted. During the installation of the lattice gate, the proper closing and the function of the switch need to be checked.



Cabin light

The lamp is mechanically pre-installed. For wiring, please see the wiring diagrams.



Sheave 1:1

The top structure part with the drive machine is pre-installed. The advised torques of the bolted connection need to be checked. The pulley supporter is to be installed in between the 2 crossbeams

Pulley supporter



The machine room floor is to be fixed to the crossbeam and the pulley supporter. The needed clamp plates are pre-installed on the machine room floor.



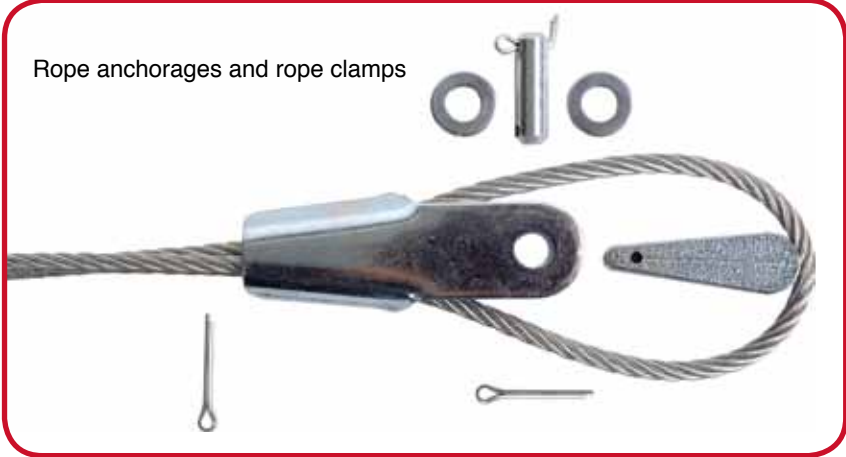
These pictures show the machine room floor on a lift type with cabin roller shutter.



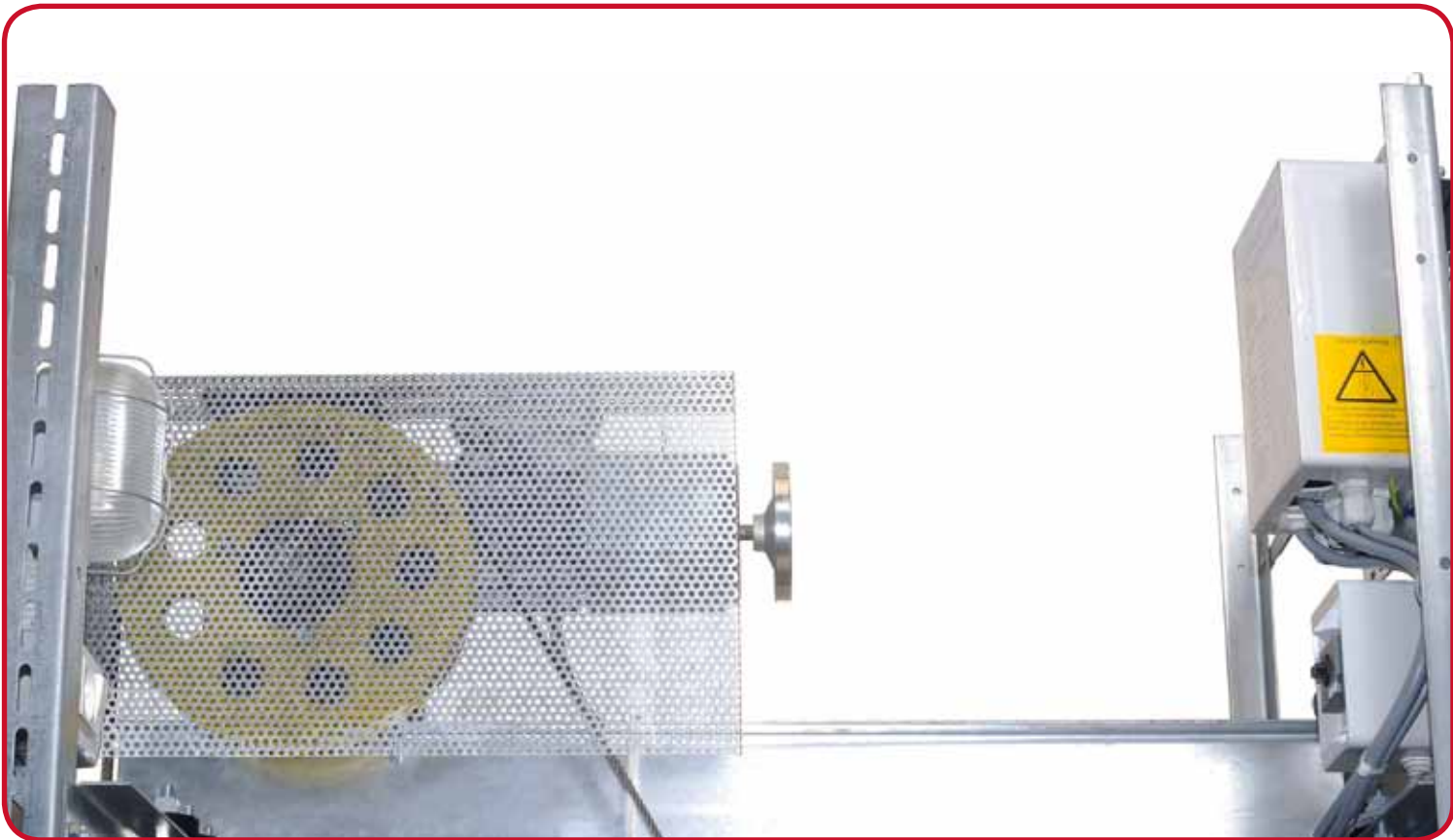
The ropes of the counterweight are to be led over the sheave and the pulley supporter to the cabin.



On the cabin, the ropes are then to be led through the rope anchorages and be fixed with rope clamps.



The protective grid made of perforate plate is to be installed on the drive machine so to cover the sheave.



Sheave drive 2:1

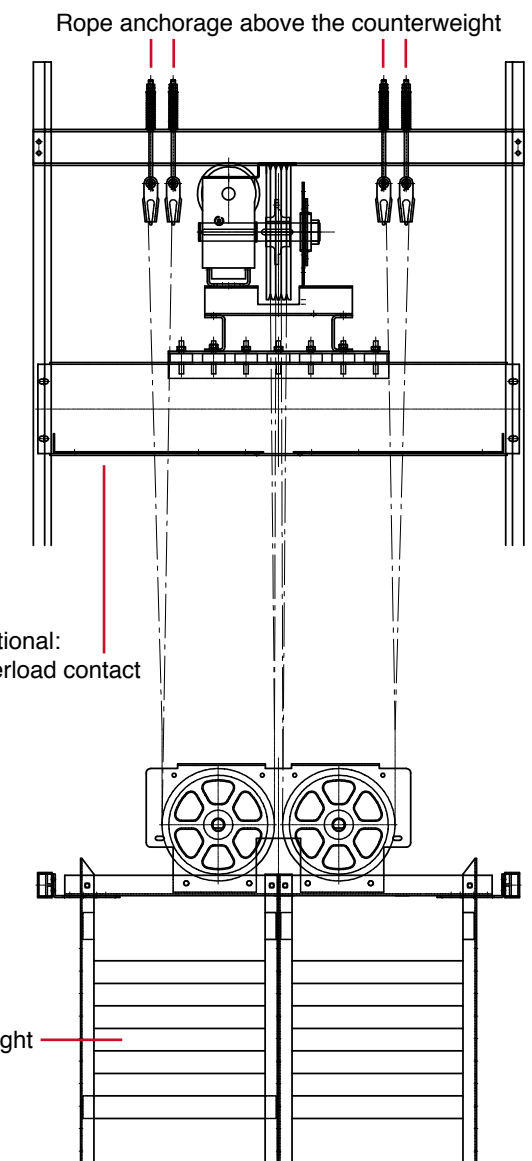
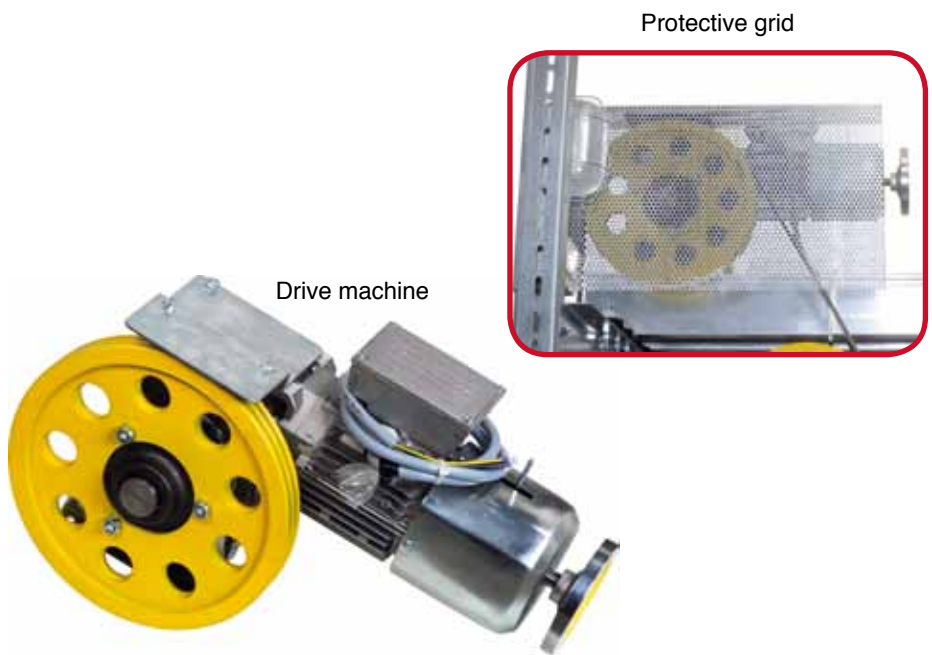
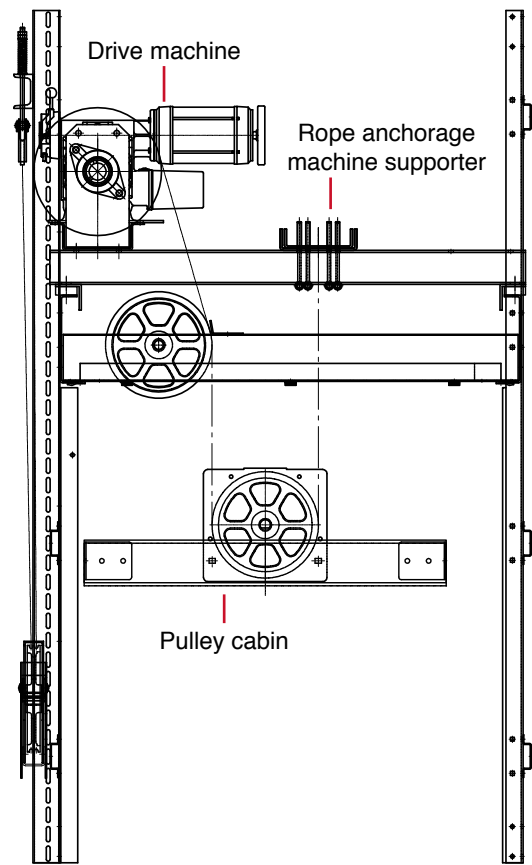
The machine supporter is pre-installed. It needs to be installed center on the buffer support angles. The sheave needs to be front, the motor behind.

The pulley supporter is to be installed in between the two crossbeams.

The machine room floor is to be fixed on the crossbeam and the pulley supporter. The needed clamp plates for this installation are pre-installed on the machine room floor.

The ropes are running from the rope anchorages on the machine supporter to the pulley on the cabin. The rope then runs to the drive machine where the ropes are splitted, one rope on each pulley on the counterweight. From the counterweight the ropes run to the anchorages above the counterweight.

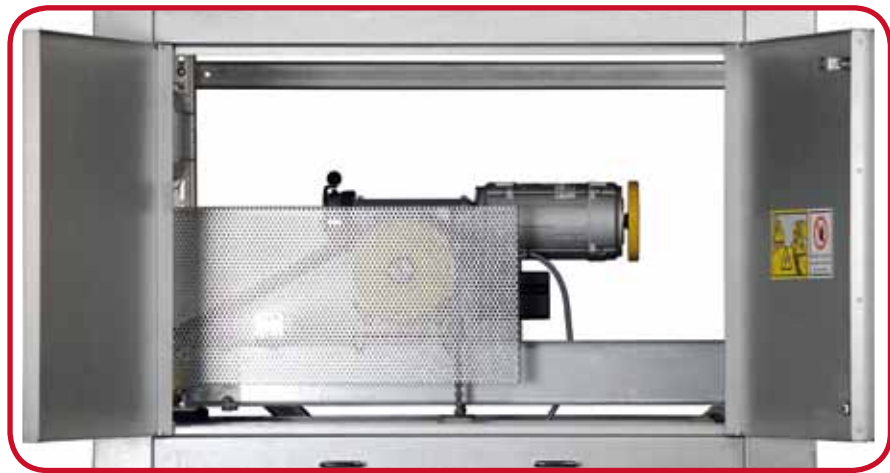
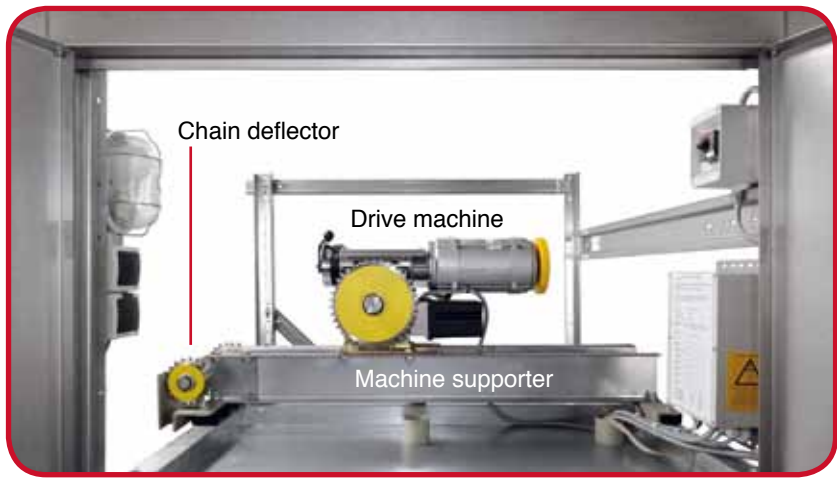
The protective grid made of perforate plate is to be installed on the drive machine so to cover the sheave.



Chain

The machine room floor is to be layed on top of the crossbeam. There are 2 chain openings and 1 cable opening in the machine room floor. The drillings on the crossbeam need to be made on site.

The machine supporter with the chain deflector need to be installed center on the crossbeam of the top structure part. The drive machine is to be fixed on the machine supporter. The chains are to be led from the balance weight over the small chain wheels and the drive machine to the cabin.

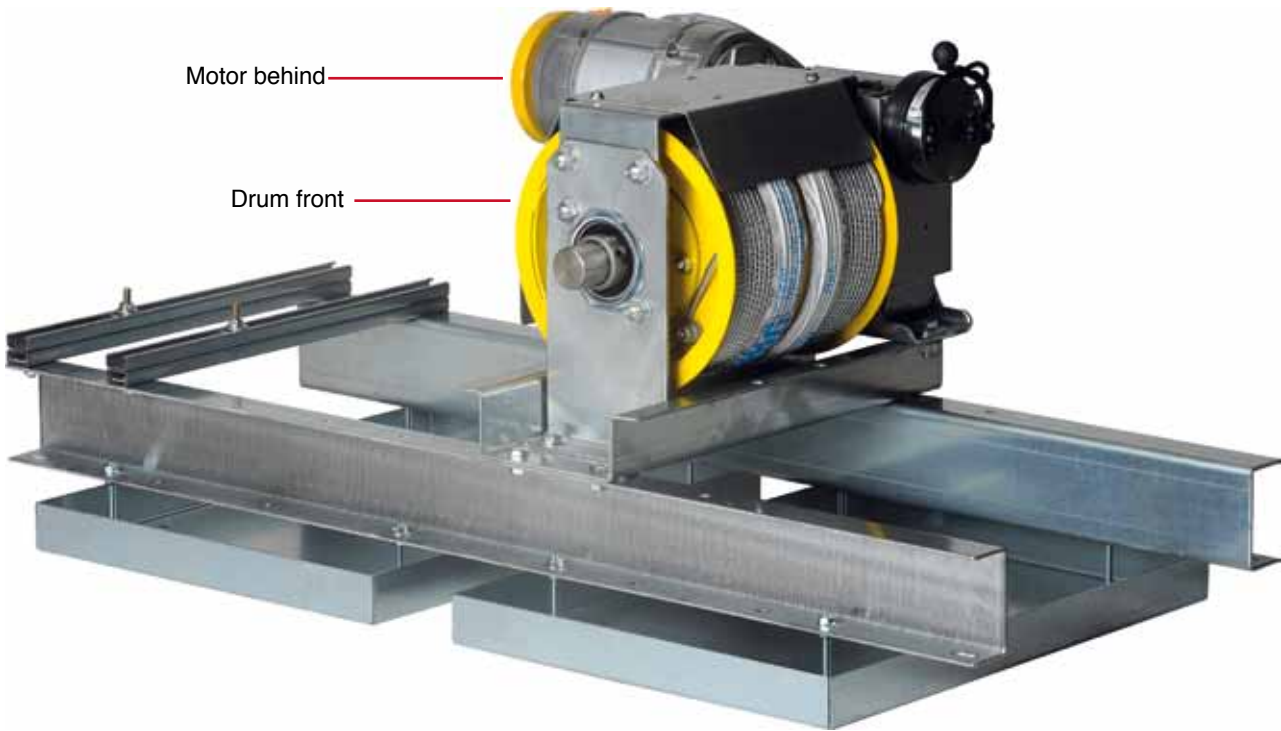


The chains are to be fixed with chain locks at their ends. The chain rocker on the cabin and the balance weight must be in a horizontal position. If the chains are too long, they need to be shortened with an angle grinder. Before cutting the chains, the rivet heads need to be grinded down (Wear protective glasses!). The protective grid is to be installed on the drive machine so to cover the chain wheels.

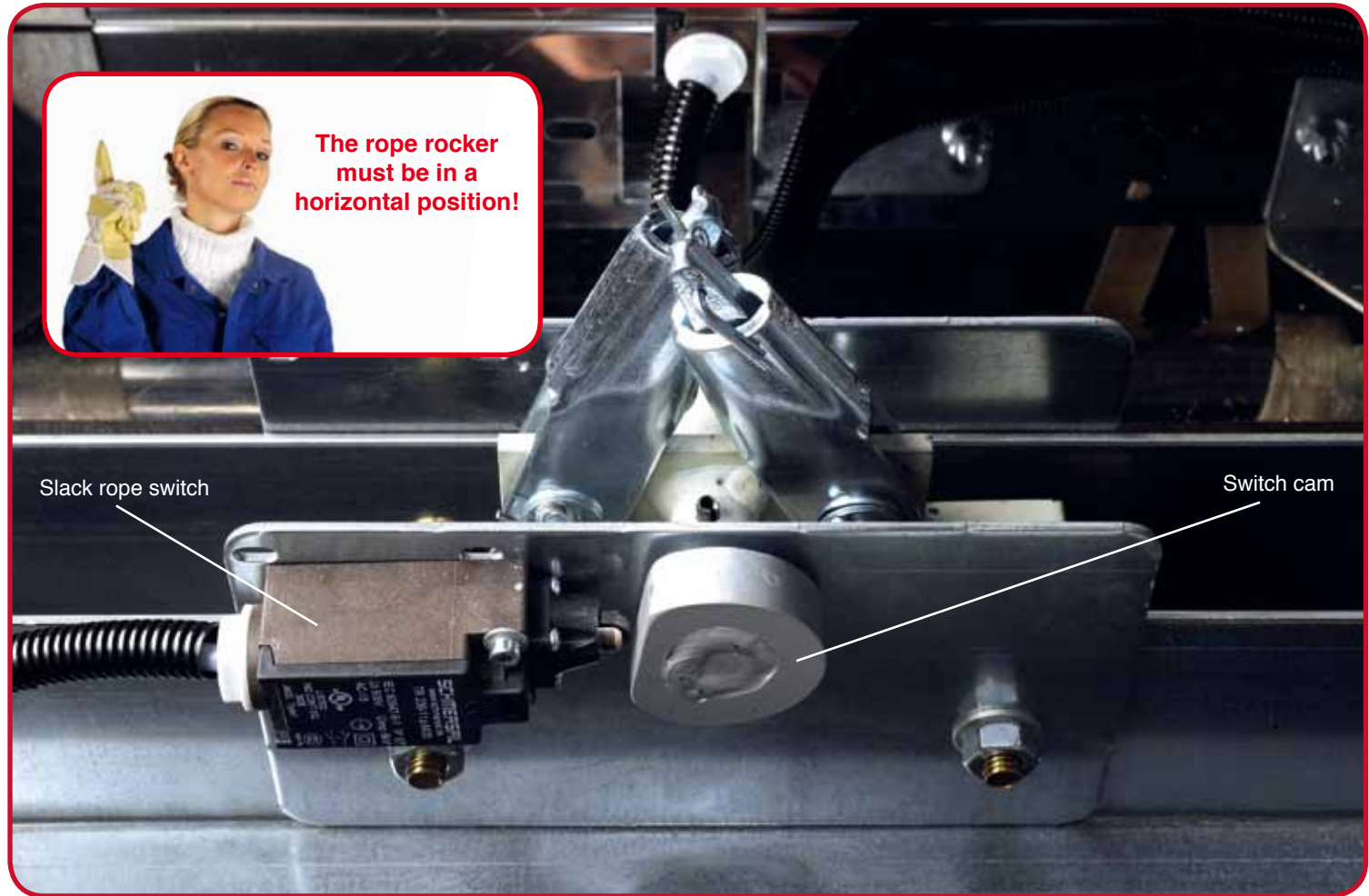


Drum on top 1:1

The machine supporter is pre-installed. It needs to be installed center on the buffer supporter angles. The drive machine needs to be in front position, the motor in back position.

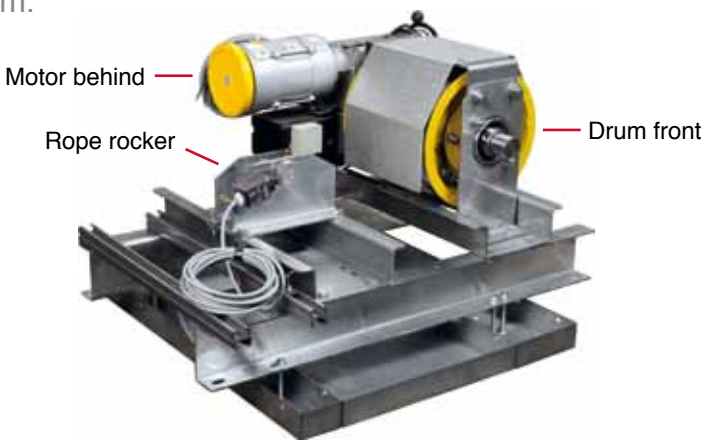


The ropes are to be led from the machine supporter to the cabin. Then the ropes are to be led through the rope anchorages und fixed with the rope clamps. Please ensure that the rope rocker is in a horizontal position because the slack rope switch must not be activated by the switch cam.



Drum on top 2:1

The machine supporter is pre-installed. It needs to be installed center on the buffer supporter angles. The drive machine needs to be in front position, the motor in back position. The ropes are to be led from the machine supporter on the cabin, then under the pulley and back to the machine supporter. The ropes are to be led through the rope anchorages on the machine supporter and fixed with rope clamps. Please ensure that the rope rocker is in a horizontal position because the slack rope switch must not be activated by the switch cam.



Drum below 1:1

The pulley supporter is to be screwed together with the crossbeam. The aluminium rings Ø 30 mm x 20 mm are serving as spacers between the pulley supporter and the crossbeam. The drive machine is to be screwed together with the machine supporter.



The ropes are to be held on the top over both pulleys to the cabin. On the cabin, they are to be led through the rope anchorages and fixed with rope clamps. Please ensure that the rope rocker is in a horizontal position because the slack rope switch must not be activated by the switch cam.



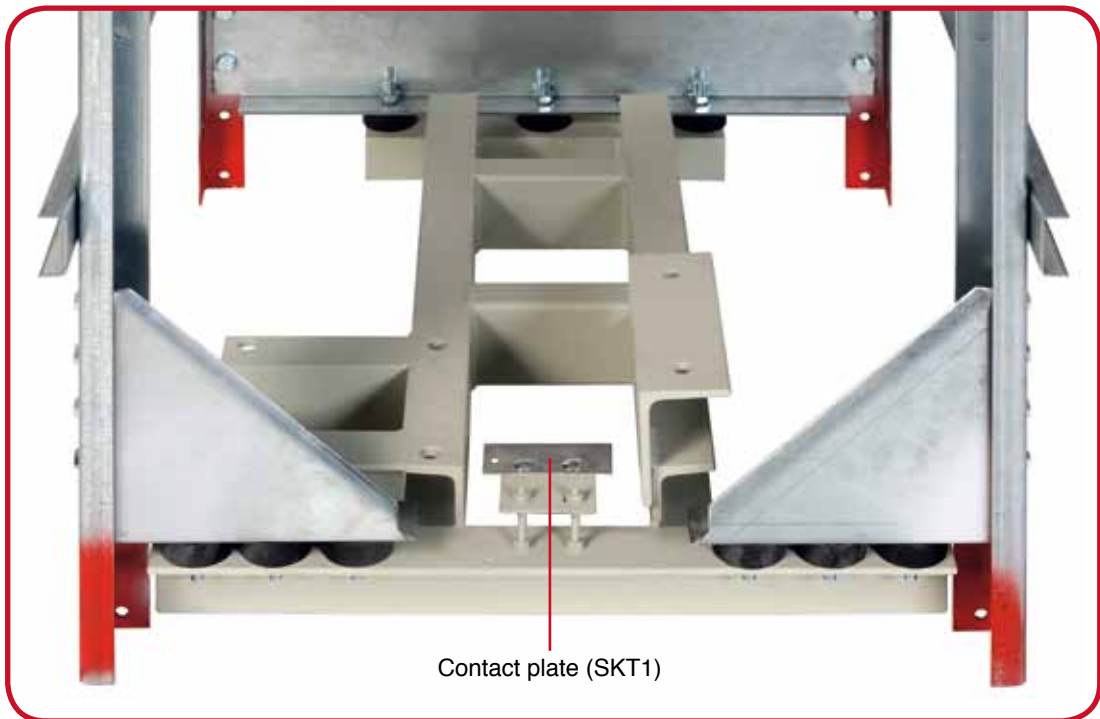
The rope rocker must be in a horizontal position!



The cover for the machine room is to be layed on the L-profiles and fixed with the clamp plates.



Under the rope drum is a contact plate. If the rope is unwinding itself from the rope drum and touching this plate, the lift will stop immediately. For wiring, please see the wiring diagrams.

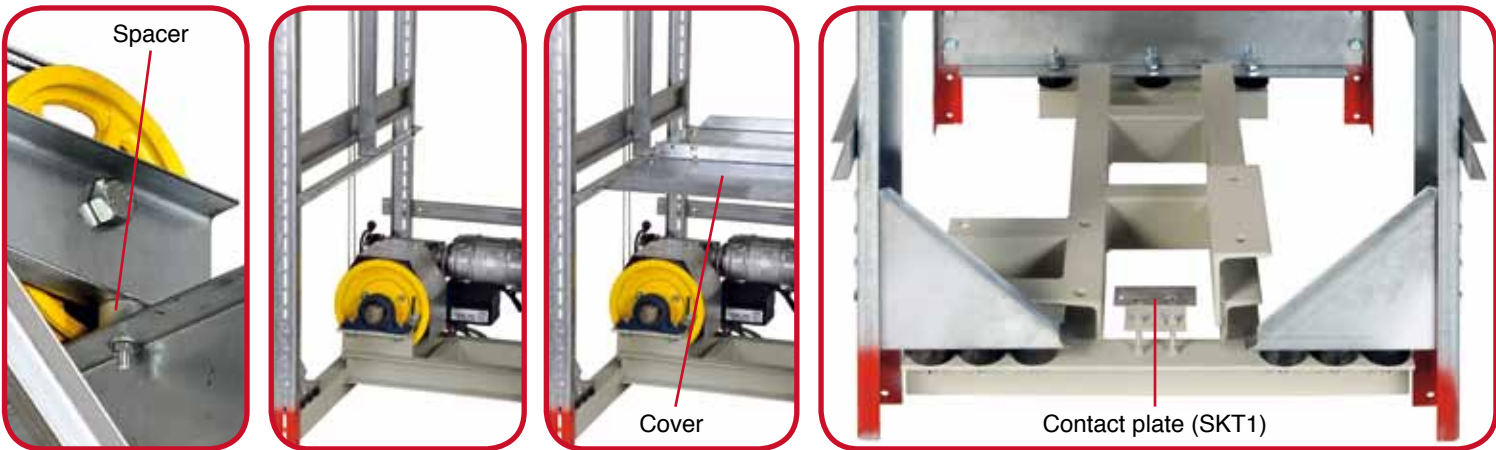


Drum below 2:1

The pulley supporter is to be screwed together with the crossbeam. The aluminium rings Ø 30 mm x 20 mm are serving as spacers between the pulley supporter and the crossbeam.

The drive machine with the drum is to be screwed together with the machine supporter. The ropes are to be led upwards over both pulleys of the pulley supporter to the pulley on the cabin. From there, the ropes are to be led to the rope rocker on the pulley supporter and are to be fixed with rope anchorages.

The cover for the machine room is to be layed on the L-profiles and fixed with the clamp plates. Under the rope drum is a contact plate. If the rope is unwinding itself from the rope drum and touching this plate, the lift will stop immediately. For wiring, please see the wiring diagrams.



Option overload

The overload device consists of a stretch measuring instrument (DMS) and the measurement amplifier. The measurement amplifier is installed in a cable box. The cable box is to be clamped vertically on the structure. The DMS is to be screwed on the described fixing points. The connection cables of DMS and measurement amplifier are soldered up.

Adjustment: the operable lift unit is to be loadad with +25 kg. The potentiometer screw (in blue cuboid) on the measurement amplifier needs to be turned clockwise slowly until the red diode next to the black cuboid stops lightning (overload reached) The potentiometer screw can be turned several times until a soft fence. **Check if the overload device stops the lift unit with a load of +75 kg.**

Note: By turning the potentiometer screw clockwise, the overload device reacts on small weights. The type signs must be visible afterwards.



Bi-parting doors

The landing doors are to be clamped with the structure straps in the structure in the relevant heights resp. screwed together with the structure. The emergency release holes are in the door frames on the installation side. The are covered with plastic cover. The door locks are to be screwed together with the door frame on the back sides of the doors. The counter parts of the door locks are to be screwed together with the door leafs. The door locks are delivered in a separate box.

The landing doors may just open when the cabin is in the corresponding floor. The landing door must be adjusted in that way so the door contact can not open when the landing door is closed and locked. Otherwise, flattering contacts can effect the damage or misfunction of the controller.

Checking the electrical door contact:

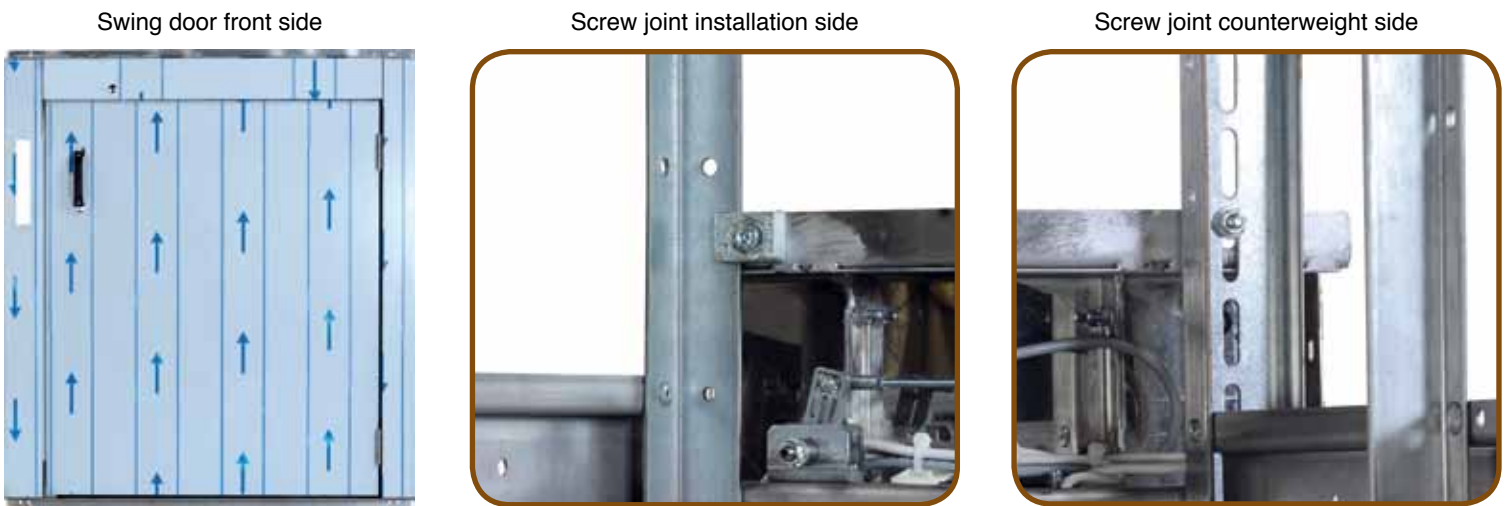
- 1. Parking the cabin between the floor
- 2. Close the landing door
- 3. Try to open the upper door leaf, the leaf can move approx. 1 - 2 mm
- 4. The indication in the push button board must not change (door contact must not open)

On the AS controller, the X must not appear. On the relay controller, the occupied light must not be lightning.



Swing doors

The landing doors are fitted with the threshold angle towards the floor. The landing doors are fixed to the installation side by clamp plates. The swing doors are to be screwed together with the structure on the counterweight side.



The door switch with door lock is pre-installed in the upper door frame.



When the door is open, the door lock and the door contact is visible. The clutch of the door contact is positioned in the frame. The plug on the door contact is adjustable. The door contact bridge must be installed on the door wing. The emergency release holes are in the upper frame. They are covered with plastic covers. The holding plate of the door lock is to be clamped on the structure.



Machine room door

The machine room door is to be screwed together with the structure on the counterweight side by using screws and nut stones. On the installation side, the machine room door is clamped on the L-profile.

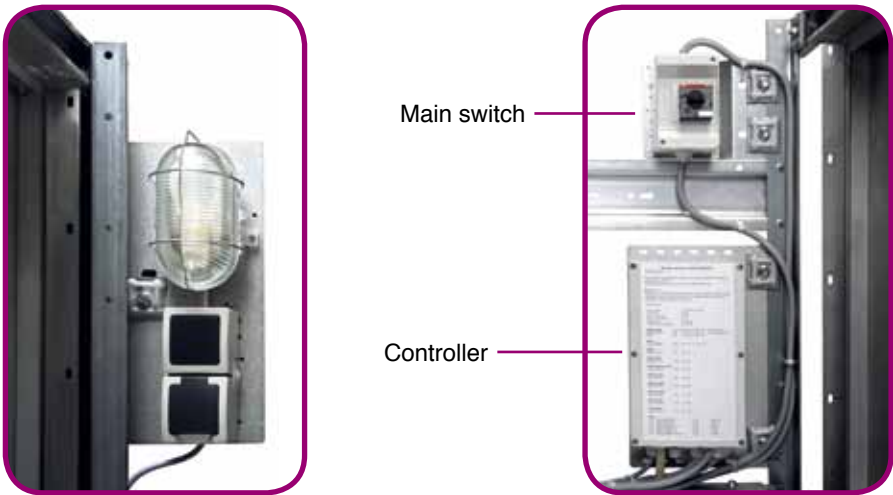


Sheave

The installation of the electrical equipment must be made by an electrical specialist!

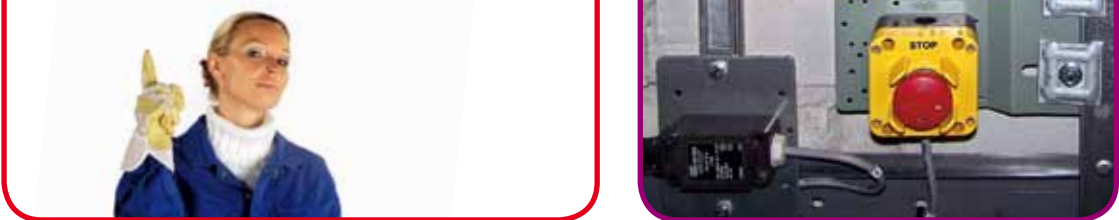


The controller is mounted on a plate. The plate is to be fixed by clamp plates on the corner profiles. The main switch and the machine room lightning is to be fixed on a proper position on the corner profiles also.



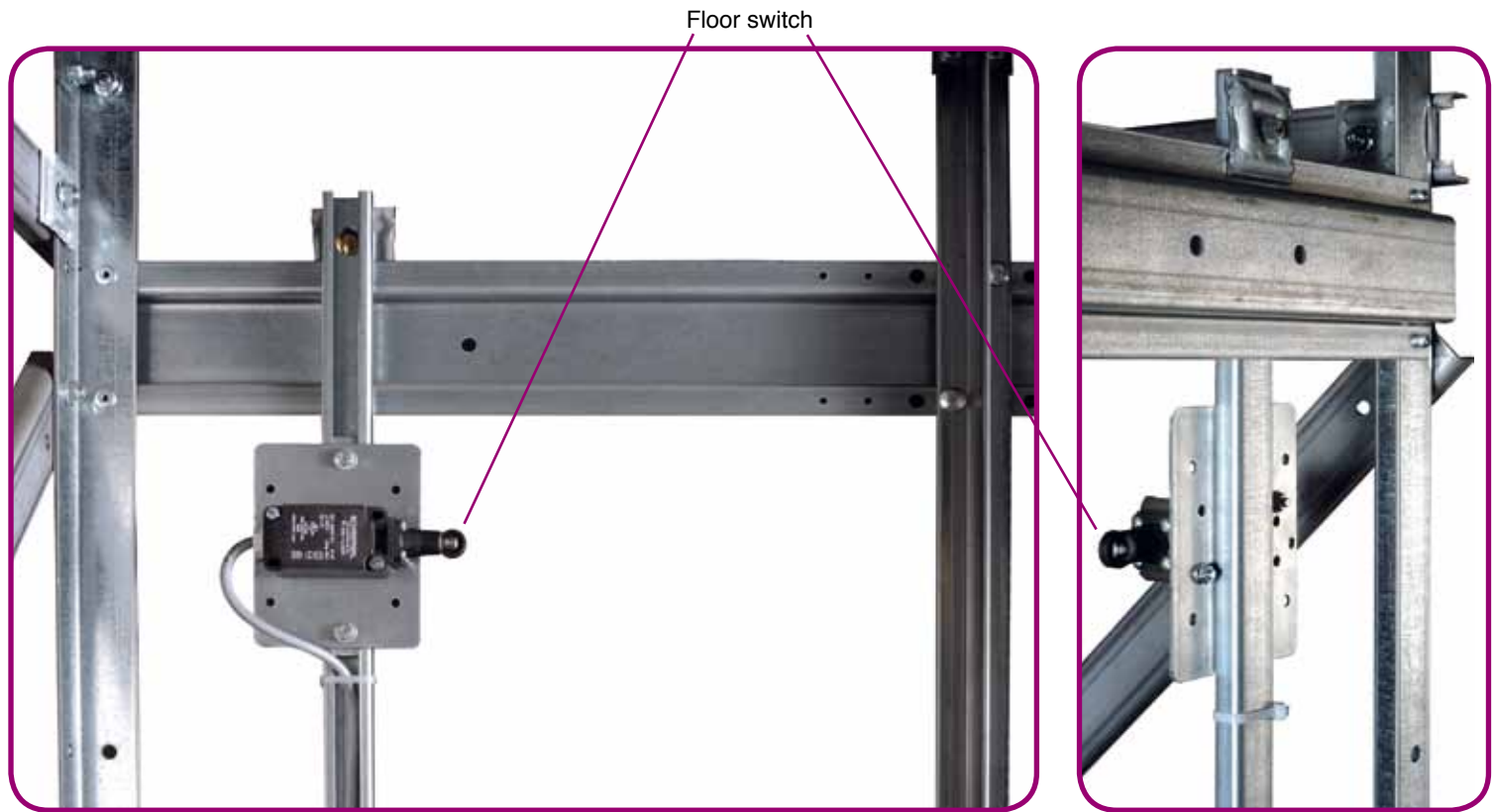
The emergency stop button is to be fixed on the corner profiles in a good reachable position. It needs to be installed to the structure in the height of the lower landing door. For reaching the emergency stop button you must not grab over energized components.

Do not grab over energized components for reaching the emergency stop button!



The floor switches are to be fixed inside the corresponding rails and can be adjusted vertically. The rails are to be clamped on the profiles on the shaft structure. For a flush stopping of the cabin in the floor, please adjust the floor switches accordingly. The switches are activated by the operators on the cabin so they need to be installed in alignment.

On the photo, mechanical operated floor switches are shown. On lifts with more than two stops, magnet switches are set. The procedure is the same.



The electrical components on the cabin are pre-installed. Just the trailing cable has to be installed. The trailing cable is to be led through the conduit at the side of the cabin on the counterweight side and then clamped on the fixing underneath the cabin. Let the trailing cable run in the cable conduit in the upper third of the structure. The length needs to be adjusted to prevent that the cable is dragging on the shaft floor when the cabin is in the lower floor.



The push button element is to be inserted in the cut out in the door frame. Tighten the screws on the clamp plates regularly. The push button elements must be installed in the corresponding floors. They are marked on the back side from bottom to top starting with the number 1. This marking does not correspond with the floor markings on the layout drawings.

If there are 2 loading stations in one floor (through car), the floor switch is connected to the push button element with the index marking A.

Please see the wiring diagrams and the AS 3 manual for the exact cabling.

Special features on drive machine with chain wheels

On lift units with chain drives, a second trailing cable for the slack chain switch must be installed on the balance weight. The trailing cable is to be fed through the conduit at the side on the cabin then fixed on the trailing cable fixing. The trailing cable then lead underneath the bottom profile through the screw joint from underneath in the balance weight. Fix the trailing cable along the bar and lead it through the pipe to the chain rocker. Please ensure that the trailing cable is not dragging on the shaft floor when the cabin is in the lower floor.

The control current limit switches are to be installed in the lowest and highest floor. The switches are to be fixed in the rails and are vertically adjustable. The rails are to be clamped on the profiles at the structure. The operator for the control current limit switches are at the side of the cabin. If the cabin depth is less than 800 mm, the operator is positioned on the counterweight side. The control current limit switches will be activated after the floor switches. They are additional safety switches which are activated if the floor switches fail.

Special features on drive machine with drum drive

The control current limit switches are to be installed in the lowest and highest floor. The switches are to be fixed in the rails and are vertically adjustable. The rails are to be clamped on the profiles at the structure. The operator for the control current limit switches are at the side of the cabin. If the cabin depth is less than 800 mm, the operator is positioned on the counterweight side.

The control current limit switches will be activated after the floor switches. They are additional safety switches which are activated if the floor switches fail.

Done!

